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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/798,719

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Christian Herzum

1890-0066

5006

7590

03/08/2006

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EXAMINER

CAO, PHAT X

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/798,719

Applicant(s)

HERZUM ET AL.

Examiner

Phat X. Cao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 14-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

### **DETAILED ACTION**

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

#### ***Drawings***

2. Figures 1A and 1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Claim Objections***

3. Claim 14 is objected to because of the following informalities: in claim 14, line 1, "comprising" should be changed to "comprising:". Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Ozaki et al (US. 5,094,965).

Regarding claims 14 and 16, AAPA (Fig. 1B and pages 3 and 4) discloses a semiconductor device, comprising: a substrate 10; active areas 14/16 formed within the substrate 10 comprising a source area S and a drain area D; a gate 22 disposed between the source area and the drain area and insulated from the substrate 10 by an oxide layer 24; a first non-planar metallization level 42 formed on the substrate in contact with the active areas including a first portion 42A connected to the source area S, a second portion 42B connected to the drain area D and a third portion (not labeled) at least partially covering the gate 22, the third portion including a portion covering a side face of the gate 22 facing the source area S, a portion covering a surface of the gate 22 facing away from the substrate 10, and a portion covering a part of a side face of the gate 22 facing the drain area D, the portion covering the side face of the gate facing the drain area D terminating at an end displaced from the substrate 10 by a predetermined displacement DELTA; and a second metallization level 44A arranged spaced apart from the first metallization level 42 above the substrate 10 and connected to the second portion 42B of the first metallization level 42 via a through connection.

AAPA does not disclose that the second metallization level 44A is planar.

However, Ozaki (Fig. 2L) teaches the forming of a first metallization level having a portion 19b connected to the drain area 8b, and a second planar metallization level 50 (column 11, lines 24-37) arranged spaced apart from the first metallization level and connected to the portion 19b of the first metallization level via a through connection 14b. Accordingly, it would have been obvious to modify the device of AAPA by forming the second metallization 44A having a planar structure because such forming planar

metallization structure of the second metallization level would decrease the resistance of an interconnection to a drain region and would provide a coplanar cross-sectional structure having a high integration density, as taught by Ozaki (column 11, lines 38-41 and column 6, lines 17-22).

Regarding claims 15, 17 and 19, AAPA's Fig. 1B further discloses that the first portion 42A and the third portion (not labeled) of the first non-planar metallization level 42 are connected, the third portion implemented to shield the gate 22 against electrostatic or interferences (par. [0014]), and an oxide layer 20 is disposed between the third portion and the gate 22.

Regarding claim 21, AAPA's Fig. 1B further discloses that the predetermined displacement DELTA is set to be less than the thickness of the gate 22.

Regarding claim 18, AAPA does not disclose the predetermined displacement DELTA being set in a range as claimed.

However, it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Therefore, it would have been obvious to set the predetermined displacement DELTA of AAPA in a range as claimed because the predetermined displacement DELTA can be optimized during routine experimentation depending upon the capacitance, which is, desired between the first metallization level 42 and the drain region 16. Furthermore, it appears that the changes in predetermined displacement would produce no functional differences in shielding the gate electrode 22 from

electrostatic or electrodynamics interferences. Therefore, it would have been obvious. See *in re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ 2d 1934, 1936 (Fed. Cir. 1990).

Regarding claim 20, Ozaki (Fig. 2L) also teaches the forming of LDD region 6b (column 4, lines 49-54) disposed between the gate 40 and the drain area 8b for the known purpose of reducing electric fields.

### ***Response to Arguments***

6. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. However, the new reference is applied and the new final rejection is made because of the new issued presented in the amendment filed on 8/24/05.

### ***Conclusion***

7. Applicant's amendment filed on 8/24/05 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is 571-272-1703. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PC  
March 3, 2006

  
PHAT X. CAO  
PRIMARY EXAMINER